

than usual, and with few exceptions, were not susceptible to frost damage. No general frost warnings were issued and, as a rule, the local interests were protected by advance advices as far as practicable. This was especially the case in the cranberry marshes of Wisconsin, where abnormally low temperatures are the rule during frost conditions.

A disturbance of considerable intensity developed in the Northwest on the 18th, and moved in an easterly direction with its center over the northern Lakes, attended by strong shifting winds on the 20th. Storm warnings were ordered for western Lake Superior on the evening of the 19th and for the remainder of the Great Lakes on the morning of the 20th, apparently sufficiently in advance of the occurrence of the storm.

Rather strong winds also prevailed on the northern and central portions of the Great Lakes on the 30th, because of the development of a disturbance west of the Mississippi River and an area of high pressure of great magnitude which moved southeastward from the Canadian northwest over Ontario, these causing a steep barometric gradient over the Lakes.

There were no other storms of marked importance, so far as winds are concerned.

For the information of the pilots taking part in the First Annual Commercial Airplane Reliability Tour special forecasts were furnished to the aviators daily or twice daily from the time the planes left Detroit on September 28 until their arrival in Indianapolis October 2.

I was personally advised, moreover, by the flyers that the information was of great service to them; and a letter of appreciation was recently received from the aviation committee of the Chicago Association of Commerce.—*H. J. Cox.*

NEW ORLEANS FORECAST DISTRICT

A disturbance of moderate intensity appeared in the west Gulf off the mouth of the Rio Grande during the evening of the 6th, and northeast storm warnings were ordered displayed at 9 p. m. from Corpus Christi to Brownsville, and on the morning of the 7th were extended over the remainder of the Texas coast. The disturbance moved northward with diminishing intensity and storm winds occurred only on the western portion of the Texas coast. Small-craft warnings were displayed at Corpus Christi on the 17th, 24th, and 29th. No storm occurred without warning.—*I. M. Cline.*

DENVER FORECAST DISTRICT

Low pressures prevailed in the Rocky Mountain region during the first two decades, attended by frequent showers and thunderstorms in the Denver district. An area of high pressure, accompanied by much lower temperatures, with occasional frost in the northern portion of the district, drifted slowly across the northern Rocky Mountain sections during the period from the 19th to the 24th. High pressures and low temperatures also prevailed in western Canada and the northern portion of the Rocky Mountain region from the 26th to the end of the month, while a low of moderate intensity advanced eastward from the plateau from the 24th to the 29th. This last disturbance was followed on the 30th by frosts in western Colorado, Utah, and northern Arizona, with freezing temperatures in southern Utah, the southwestern valleys of Colorado, and at the higher elevations of northern Arizona.

Warnings of frosts and freezing temperature were issued as follows: 21st, frost southwestern Colorado and at the higher elevations of northwestern Colorado, northern Arizona, and southern Utah; 22d, frost northern

and western Colorado and at the higher elevations of northern Arizona and southern Utah; 23d, frost in northern and western Colorado and at the higher elevations of southern Utah; 24th, frost in southwestern Colorado; 29th, frost in northwestern Colorado, extreme northwestern New Mexico, and southern Utah, with freezing temperature in southwestern Colorado and at the higher elevations of southern Utah and frost or freezing temperature in north-central and northeastern New Mexico; 30th, frost in Colorado, northwestern and extreme north-central New Mexico, northeastern Arizona, and northern and eastern Utah, with freezing temperature in southwestern Colorado and at the higher elevations of northeastern Arizona and northern and eastern Utah. The warnings were generally verified.—*J. M. Sherier.*

SAN FRANCISCO FORECAST DISTRICT

The month opened with a well-defined area of high barometric pressure over the ocean, low barometric pressure over Alaska, and low barometric pressure over the continent west of the Rocky Mountains. This situation rapidly changed during the first two days of the month and on the second the HIGH over the ocean shifted northward and a disturbance formed some distance off the California coast. While the HIGH over the ocean moved northward and became centered over the Gulf of Alaska and the ocean to the southward, the pressure remained low along and off our coast. This area of low pressure persisted for several days and finally advanced eastward, crossed the coast line and the weather cleared throughout the Pacific States. In the meantime there were local showers in northern California and nearly all other sections west of the Rocky Mountains. The first rains of the season in northern California accompanied the changed pressure situation as described. The rains, coming early, did no material damage to fruit that was in the process of drying.

From the 8th to the 12th inclusive, the HIGH over the ocean was at all times well defined and of considerable extent, but centered far northwest of its normal position and with its major axis paralleling the meridians rather than the parallels of latitude, its former direction. This situation was attended by the formation of areas of low barometric pressure off our coast, one of which on the 16th assumed the characteristics of a disturbance of marked intensity off the Washington-Oregon coast, on which date at 8 a. m., one hundred and twentieth meridian time, a barometer reading of 29.20 inches was reported by the *S. S. Waitemata* while in approximately latitude 45 degrees north and 130 degrees longitude west. This disturbance instead of advancing eastward moved southward along the periphery of the HIGH to the westward and caused quite general rains in the north portion of northern California, the Pacific Northwestern States and the Plateau States during the succeeding several days. On the 16th storm warnings were ordered for coast stations at and north of Cape Mendocino, and while no storm winds occurred at coast stations, winds of gale force prevailed off the coast as shown by reports received by radio from ships. The rains in California were forecast sufficiently ahead of their occurrence to permit of protective measures being taken to prevent damage to drying fruit. The weather became again fair throughout the forecast district on the 20th, and remained so until the 25th, when conditions became unsettled along the north coast. In the meantime warnings of high fire hazard in the forested areas were issued on the 21st for southern California, where during the following several days the relative humidity was decidedly below normal.